Met briefing, AM 041030

Review of Yesterday's flight

The first plot shows the forecast for clouds for yesterday's flight, with the second plot a visible satellite image. We note that, though the model forecasts near 0 cloud cover, there are in fact scattered clouds over the Gulf. As the 850 mb northward flow hits the Louisiana coast, the heating of the land generates substantial low cloud, which can be seen in the image. Brian reported this broken cloud deck at low levels in this region during the debrief. Looking further north in the forecast cloud plot, we see higher forecast cloud fractions, which are all "low cloud" according to the model. The third plot shows an infrared image during the flight, with the thunderstorm reported by Brian and Bill showing up as a small magenta spot at the southern edge of Missouri (underneath the red numbers). A chance of scattered thunderstorms were forecast for this cold frontal region by NOAA's storm prediction center. The point is: (1) we need to take the cloud forecasts with appropriate grains of salt – the NMC model does appear to underforecast clouds; and (2) NMC's meteorologists got the basic picture right with their storm forecast.

Overall Weather Outlook

OK, enough pats on the back. As of midnight this morning, the upper level (500mb) flow shows the strong short wave (that generated the cold front and yesterday's Missouri thunderstorm) over southern Minnesota. The main trough is hanging back over the Great Basin. By tomorrow's flight that trough will be over western Colorado. The position of this trough, at least for this time, has been roughly consistent for the past few forecast runs. Thus, we still expect the chance of showers/thundershowers for tomorrow to be greater than the past few days, at about 40%. Conditions will deteriorate late in the day, though timing is uncertain. Models differ on the timing and the intensity of the frontal passage scheduled for Monday. This has been pushed back to Monday night, but we still expect a 70% chance of rain during the day Monday, as most of the rain falls ahead of the front. Some showers are expected Tuesday morning, tapering off later in the day with cloudy skies. Depending on the timing of the frontal passage, we could get some stiff winds out of the north (20 knots), but still within limits. Temperatures will cool off by 20 degrees! Wednesday should be fair with weaker winds.

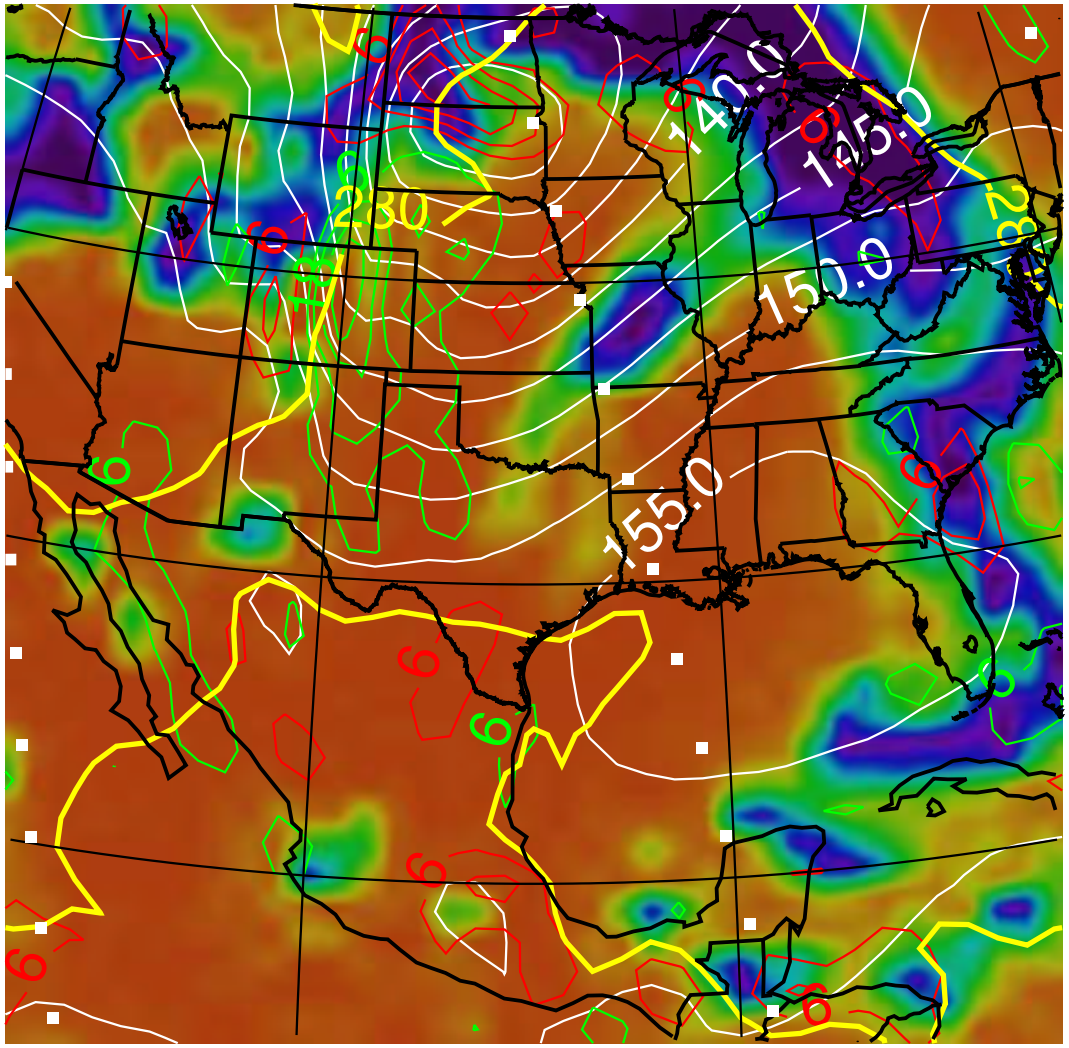
Science Implications

The fourth plot shows tomorrow's cloud forecast plot (low clouds, which account for all the clouds over the Gulf, where we expect to fly. The blotch of clouds is associated with a weak easterly wave turning around the high centered over the Atlantic. Our flight track is along the Aura orbit track in the Gulf. We should be able to find clear spots.

The fifth plot shows total cloud cover and 500mb dynamics for Tuesday. Remember that the models have significant differences at this stage. Still, we have the potential for an interesting science flight, with the tropopause (yellow line) penetrating below 500 mb, and the strong weather system winding up (at 850mb, not shown) over southern Indiana. This is an important strat-trop exchange event, and it is occurring well within our range.

The sixth plot is just like the previous one, except for Wednesday. Note the Aura overpass over clear air near the SGP site (which is in north central Oklahoma). So, both Tuesday and Wednesday present great science opportunities.

18 UTC on 29 October, 2004 at 850.0 mb



NMC, Grid: GG1X1

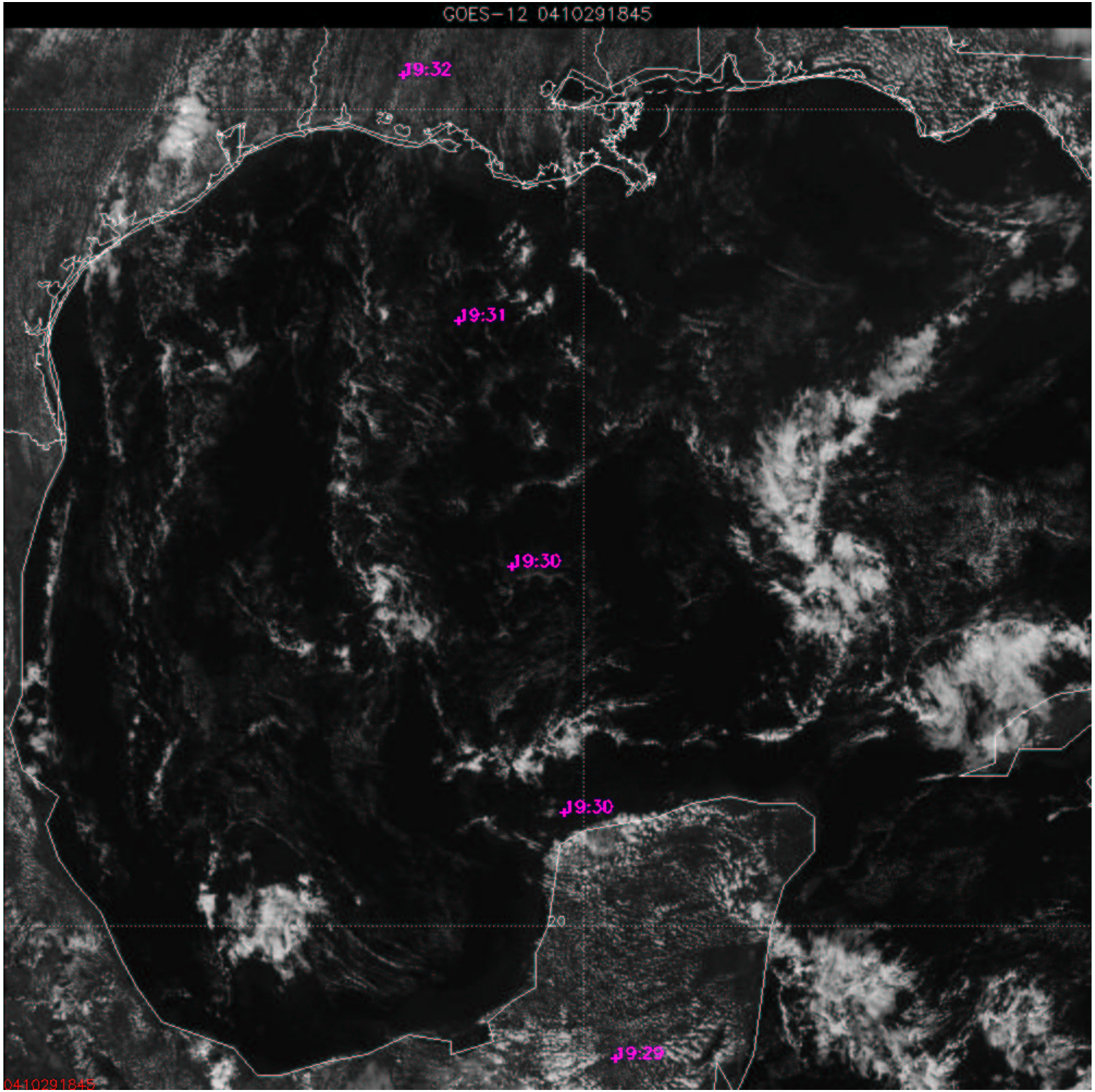
Seq: E01, Spec: SAVN170L42

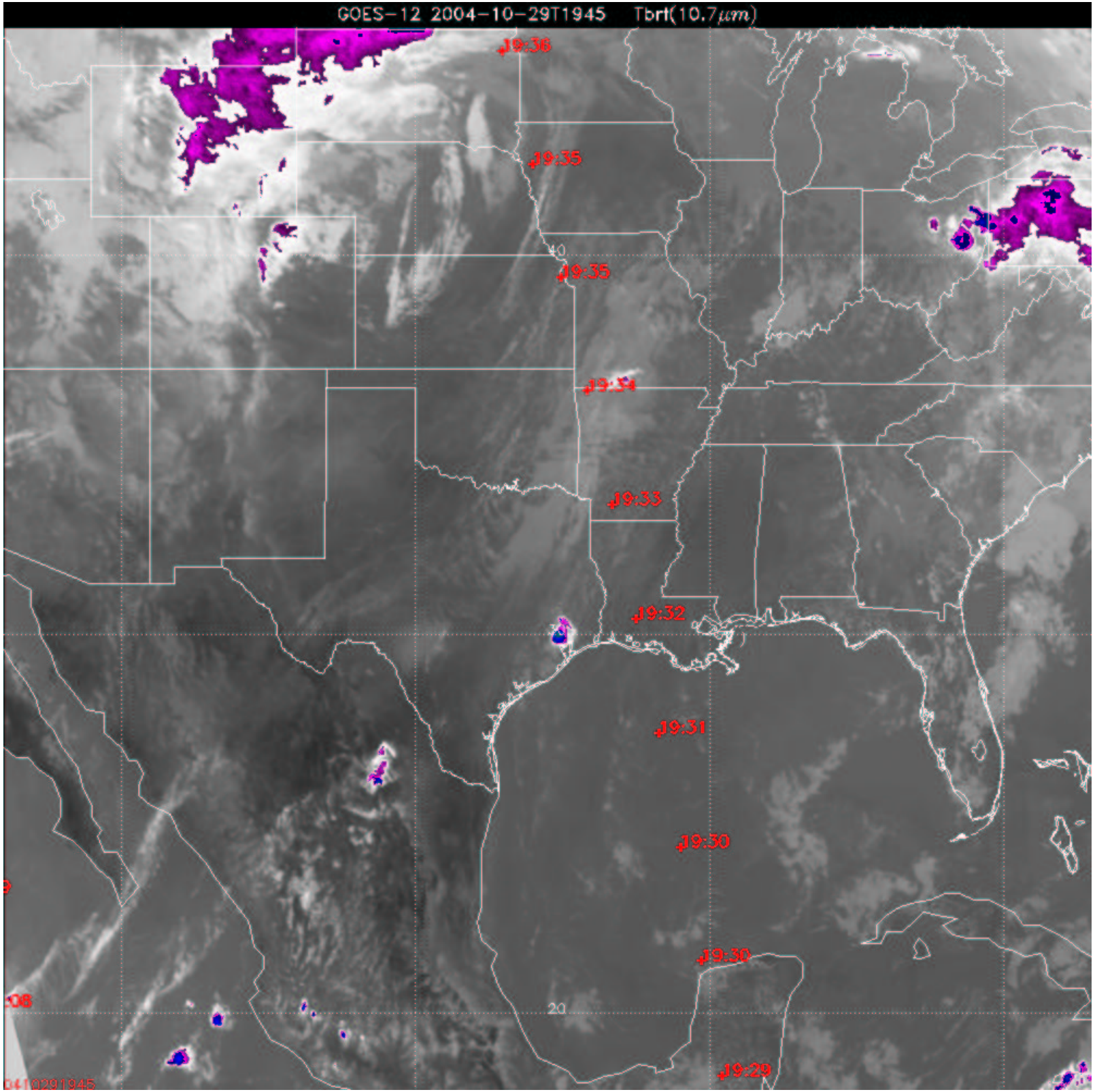
18 hr fcst

Low CF ()

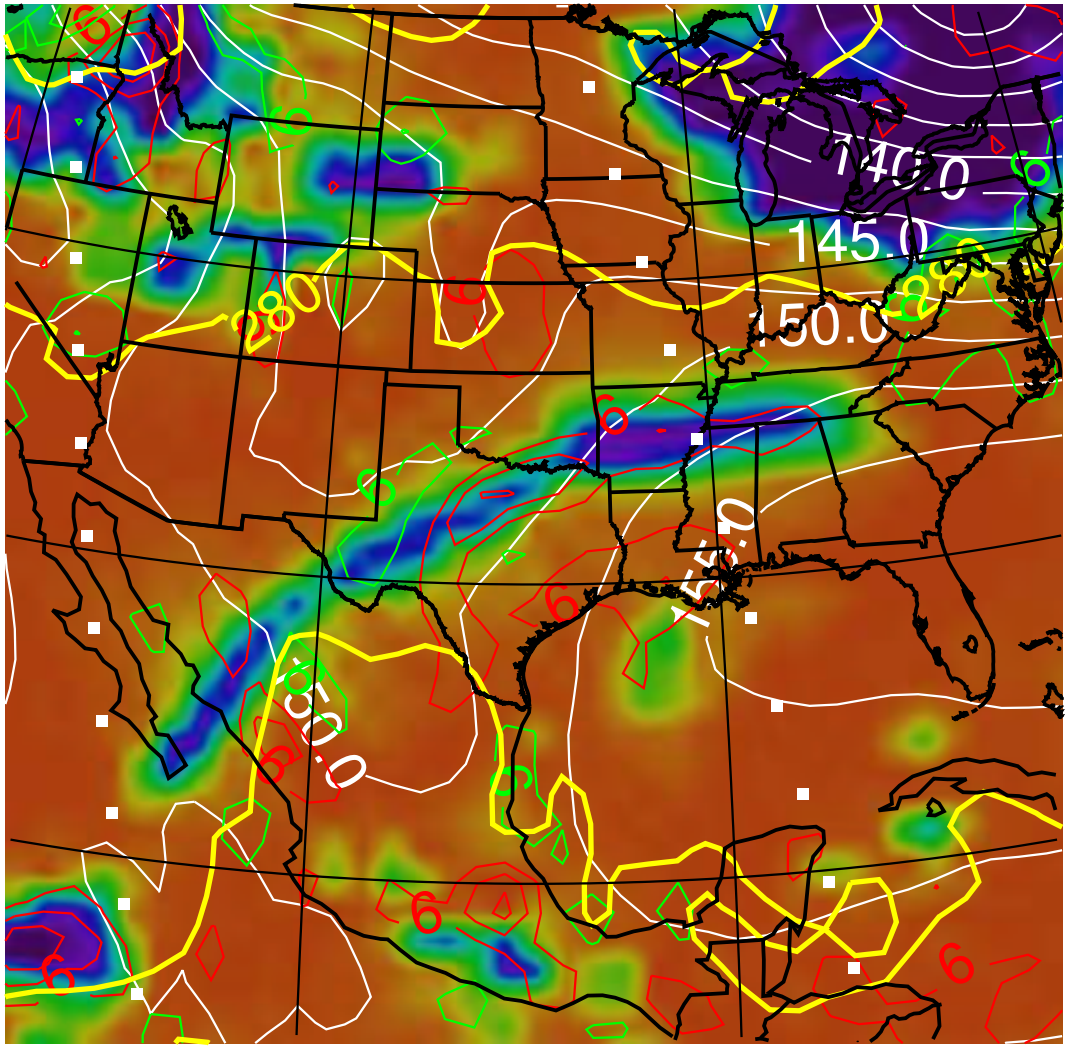
-0.20
-0.05
0.10
0.25
0.40
0.55
0.70
0.85
1.00

Z (dam) Ascent (6 mb/hr) Descent (6 mb/hr) T (K)


GOES-12 0410291845
19:32
19:31
19:30
19:30
19:29
0410291845


GOES-12 2004-10-29T1945 Tbrt(10.7μm)
19:36
19:35
19:35
19:34
19:33
19:32
19:31
19:30
19:30
19:29
20
0410291945

18 UTC on 31 October, 2004 at 850.0 mb



NMC, Grid: GG1X1

Seq: E01, Spec: SAVN170L42

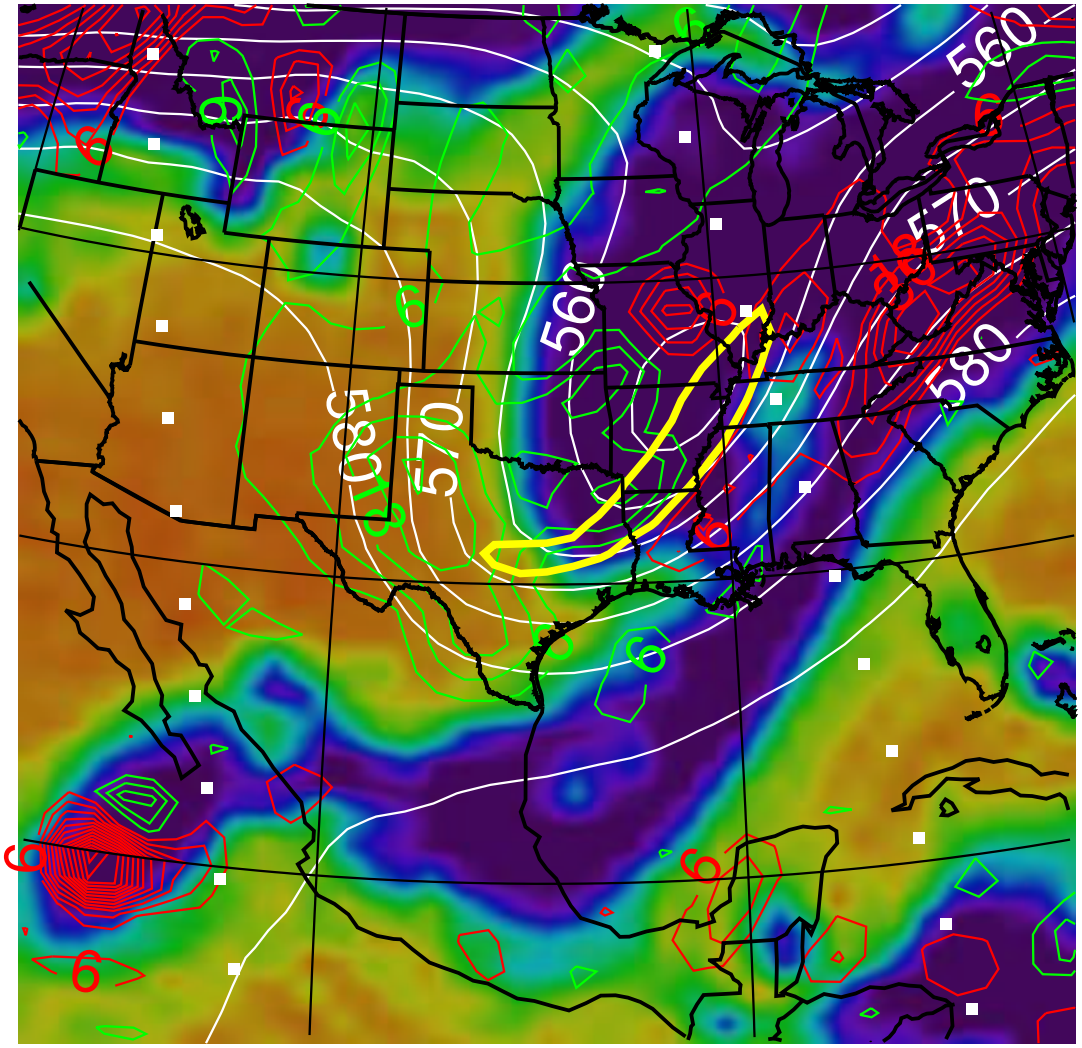
42 hr fcst

Low CF ()

-0.20
-0.05
0.10
0.25
0.40
0.55
0.70
0.85
1.00

Z (dam) Ascent (6 mb/hr) Descent (6 mb/hr) T (K)

00 UTC on 3 November, 2004 at 500.0 mb



NMC, Grid: GG1X1

Seq: E01, Spec: SAVN170L42

96 hr fcst

Total CF ()

-0.20
-0.05
0.10
0.25
0.40
0.55
0.70
0.85
1.00

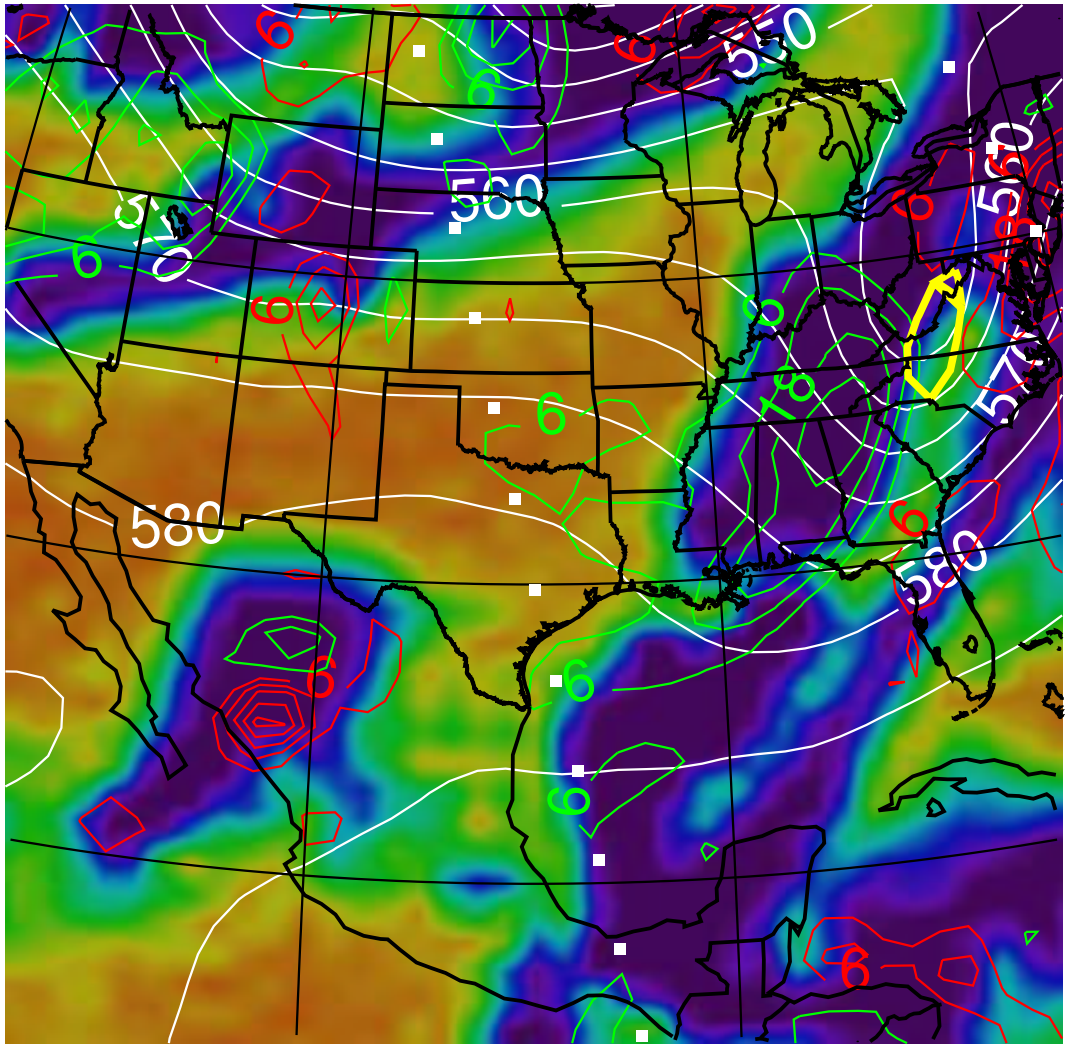
Z (dam)

Ascent (6 mb/hr)

Descent (6 mb/hr)

Trop (EPV=2.5)

00 UTC on 4 November, 2004 at 500.0 mb



NMC, Grid: GG1X1

Seq: E01, Spec: SAVN170L42

120 hr fcst

Total CF ()

-0.20
-0.05
0.10
0.25
0.40
0.55
0.70
0.85
1.00

Z (dam)

Ascent (6 mb/hr)

Descent (6 mb/hr)

Trop (EPV=2.5)